

# Operating Manual

## Culture Safe Precision

### CO<sub>2</sub> Incubator

#### P50

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# 1. Safety

## 1.1. Legal considerations



It is important that you read this manual completely and observe all instructions. Failure to follow these instructions may result in personal injury, equipment damage and incorrect performance of the incubator.

This manual contains information for installing, operation and maintenance of the incubator. It cannot cover all possible uses and applications. Please contact your dealer or LEEC directly if you have a special application or the manual does not describe your problem in enough detail.

The contents of this manual and the incubator are subject to change without notice.













## 1.2. Intended use

LEEC Culture Safe Precision CO<sub>2</sub> incubators are intended for mammalian cell cultivation under typical conditions of 37.0 °C. The pH of the cell media can be controlled by altering the CO<sub>2</sub> concentration within the incubator.

Other applications are not approved by LEEC. Please contact your dealer or LEEC directly, for advice if you intend to use this incubator for other applications.

## 1.3. Symbols used in this manual

The following symbols are used throughout this manual:

						
Risk of injury	Electrical hazard	Hot surface	Lifting hazard	Stability hazard	Compressed gas hazard	Asphyxiation hazard
						
Mandatory regulation	Read operating manual	Lift with several persons	Disconnect from electrical supply		Important information for correct operation	




## 1.4 General safety instructions

This incubator is intended for use by suitably qualified laboratory personnel who are familiar with all precautions and standard safety practices for working in a laboratory environment.

These safety instructions are intended to be used alongside any local safety guidelines, rules and regulations. If in doubt please consult the Health and Safety Officer of your organisation.

Only skilled electricians or engineers authorised by LEEC can perform repairs or maintenance on this incubator. Only original spare parts from LEEC can be used. There are no user serviceable parts within the incubator.

LEEC takes no responsibility for 3<sup>rd</sup> party accessories or equipment used with this incubator.

 <p><b>DANGER</b></p>	<p><b>Electrical hazard</b>  <b>Danger of death</b></p> <p><b>Do not remove any panels from incubator.</b>  <b>Do not allow the incubator to become wet.</b></p>
 <p><b>STABILITY HAZARD</b></p>	<p><b>Stability hazard</b>  <b>Risk of injury</b>  <b>Damage to unit</b></p> <p><b>Do not place the unit too close to the edge of a bench.</b>  <b>Do not lean on the door when open.</b></p>
 <p><b>LIFTING HAZARD</b></p>	<p><b>Lifting hazard</b>  <b>Risk of injury</b>  <b>Damage to unit</b></p> <p><b>Lift with 2 people</b>  <b>38kg</b>  <b>Observe safe handling regulations</b></p>

## 2. Description

LEEC Culture Safe Precision CO<sub>2</sub> incubators are fitted with a digital controller, ensuring precise control of temperature and CO<sub>2</sub> levels.

Accurate and stable heating throughout the entire chamber is ensured by the unique LEEC designed five sided direct heating element. In addition a separate independently controlled door heater is fitted to ensure that the inner glass door is free from condensation.

The design of these element profiles promote natural convection of the air within the chamber, ensuring even temperature and gas distribution throughout the chamber.

### 2.1. Construction

The inner chamber is made from 304 grade stainless steel. It is deep drawn from one piece of metal with no welds and is acid washed, meaning that the inner surfaces are smooth and easily cleaned.

The removable shelves, racking and water tray are also made from stainless steel.

The outer housing is made from stainless steel and powder coated with anti-bacterial biocide paint.

### 2.2. Doors

The outer door has a heater on its inner surface. This door is an integral part of the temperature control system and must be closed for the incubator to function normally.

The door is hinged on the right hand side. Left handed hinges are only available as an option at the point of ordering. Retro-fitting or conversion is not possible.

When this door is open, the CO<sub>2</sub> valve is closed and heater power is reduced to prevent over shoot of operating conditions. The door is linked to the controller alarm system. ⇒ **Section 5.13**

An inner glass door seals against a thermoplastic elastomer gasket. This allows viewing of the samples within the chamber without disturbing the temperature or atmosphere of the chamber.

The incubator can be optionally equipped with a multi-door. These multi-doors improve temperature and CO<sub>2</sub> recovery after a door opening. Multi-doors can be retro fitted. ⇒ **Section 6.2**

### 2.3. Control system

The digital controller allows the user to easily see operating conditions and to alter settings via push buttons.

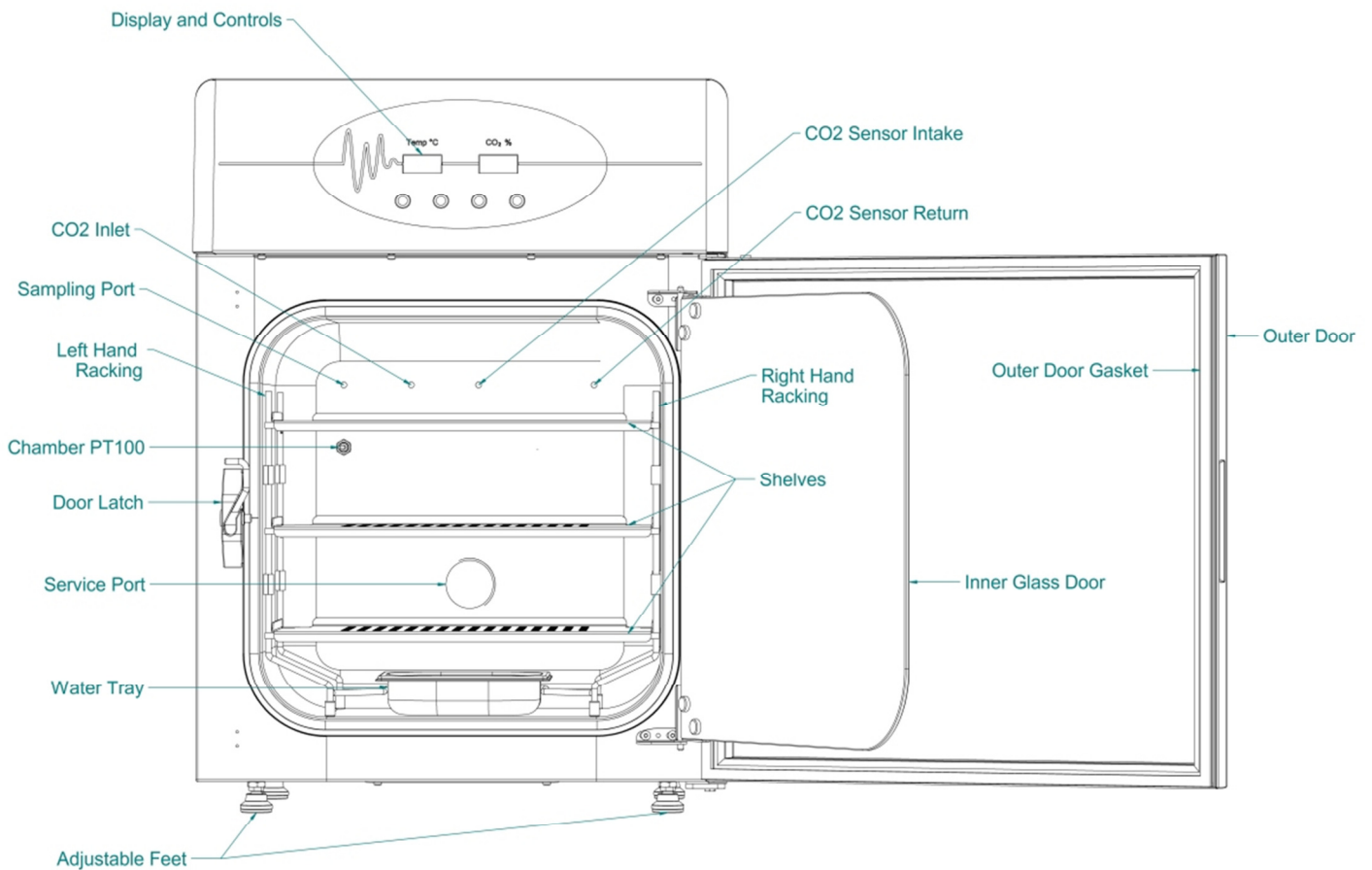
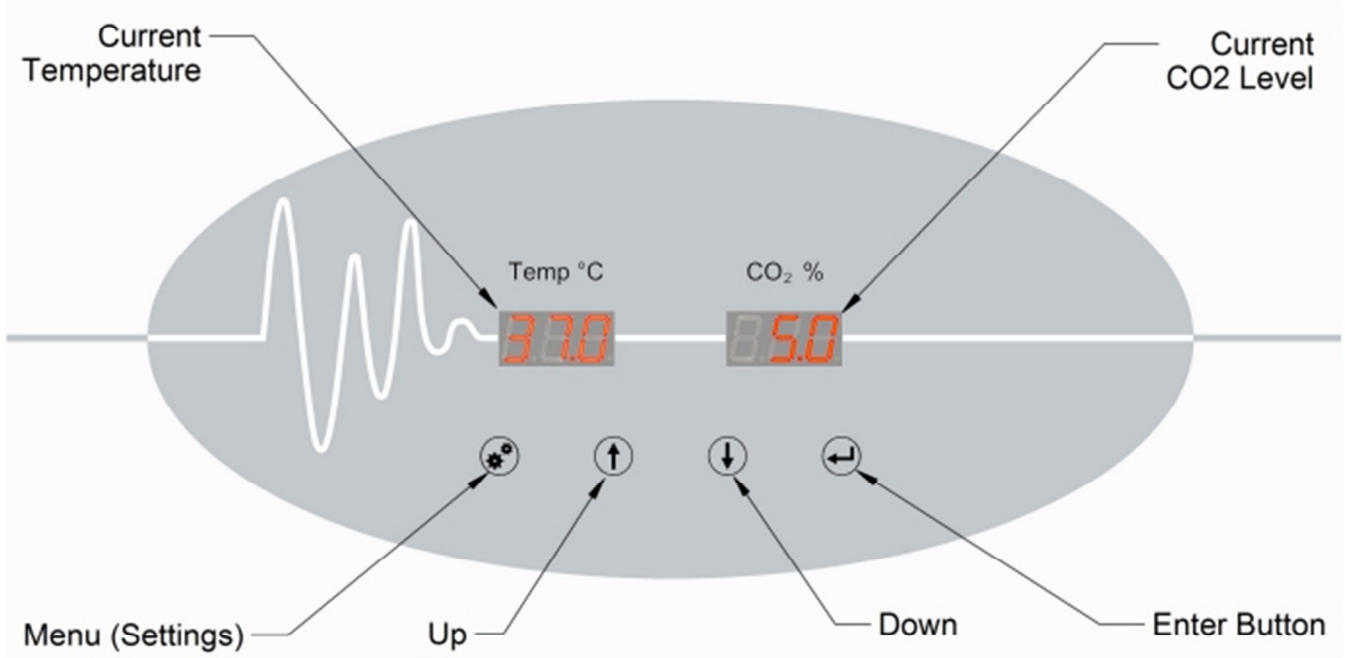
Software controlled PID loops constantly monitor temperature and CO<sub>2</sub> values, making automatic adjustments to keep the chamber atmosphere within limits.

### 2.4. CO<sub>2</sub> Sensor

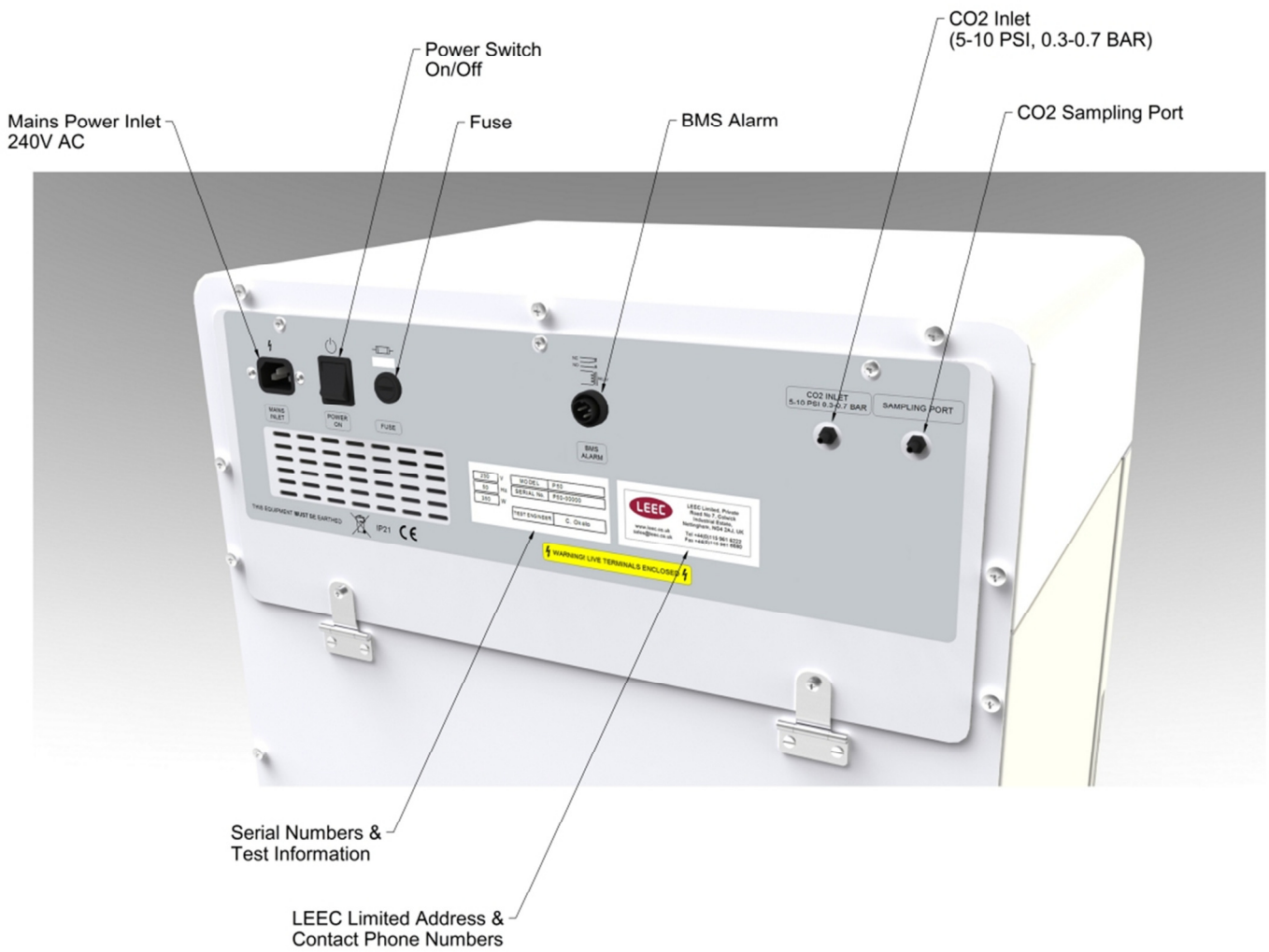
CO<sub>2</sub> is measured and controlled using a highly accurate infra-red sensor. This sensor remains practically drift free between calibration periods. The sensor is not mounted within the chamber; instead a small pump passes the chamber atmosphere through the sensor. The CO<sub>2</sub> sensor does not have to be removed during high temperature decontamination.

## 2.5. Diagrams

### 2.5.1. Front and Inner views.



## 2.6 Rear connections.





### 3. Delivery, transportation and storage.

#### 3.1 Unpacking.

Inspect the packaging for signs of transportation damage.

Carefully undo the top of the cardboard packaging and gently slide the packaging over the incubator.

Inspect the incubator and inform the carrier immediately if there are any signs of transportation damage.

Remove any packaging material from within the chamber. Remove any protective coverings from the surfaces of the inner chamber.

Remove the operating manual and accessory kit from within the chamber. Keep these safe.




Please check that the accessory pack contains the following items. Contact your dealer with details of any shortages.

Standard P50 accessory pack	Qty
Stainless steel perforated shelves	3
Shelf racking (left and right hand)	1 set
Racking support bar	1
Stainless steel water tray	1
Service port bungs	2
Operating manual	1
3.5 meter length of CO2 tubing with HEPA filter	1
Hose clips	2
Test report	1
IEC mains power lead	1

#### 3.2 Lifting and moving.

Model P50 weighs 38 Kg.

**Please refer to Manual Handling Policy of your organisation before attempting to lift the incubators.**

  	<p><b>Risk of unit sliding or tipping.</b></p> <p><b>Risk of injury by lifting heavy loads.</b></p> <p><b>Risk of damage to the unit.</b></p> <p><b>Always lift using the handles on the outside of the incubator.</b></p> <p><b>Lift with 2 people.</b></p> <p><b>Do not lift by using the door.</b></p>
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#### 3.3 Storage.

 If the incubator has been in a cold location for a period of time it needs to acclimatise to room temperature.

Move the incubator to its final location and wait for 4 hours before start up. This will allow any condensation that may have formed to dry. It will also stop the incubator from overshooting temperature set point.

## 4. Installation.

### 4.1 Location and ambient conditions



The incubator can be placed on a bench, table or worktop. Please ensure that the site is sufficiently strong enough to carry the weight of the incubator.

Correct location of an incubator is very important. The incubator is designed to work in a typical laboratory environment on a worktop or bench.

For good performance the ambient conditions should be at least 6°C below the working temperature.

E.g. for a set point of 37.0°C the ambient temperature must not exceed 31.0°C.

If the difference between the set point and ambient temperatures is less than 6.0°C then the set point can be exceeded and temperature fluctuation will occur.

Our performance data was produced at the ideal ambient condition of 25.0°C. For best performance the ambient temperature should not drastically exceed this figure.

Maximum ambient humidity is 70% rH, non-condensing. Condensation can occur within the chamber if this figure is exceeded.

A poorly located incubator can experience temperature fluctuations, poor cell growth and contamination of cell cultures. These guidelines will ensure best performance:

- The incubator should be sited on a flat, even surface.
- It should be in a well ventilated and dry area, but not sited directly in the path of ventilation or air conditioning ducts.
- It should be free from vibration.
- It should be kept away from heat sources e.g. radiators, heating pipes, refrigeration plant.
- It should not be in direct sunlight.
- To avoid contamination it should not be placed directly on the floor.
- Allow sufficient distances between adjacent equipment.
- There should not be big swings in ambient temperature.

Leave a clearance of 50mm from each side and 100mm from the rear.

Level the incubator by adjusting the two front feet. Place a small spirit level on the centre position of the middle shelf as a guide.

When it is level, secure the feet by tightening the lock nuts with a 10mm spanner.

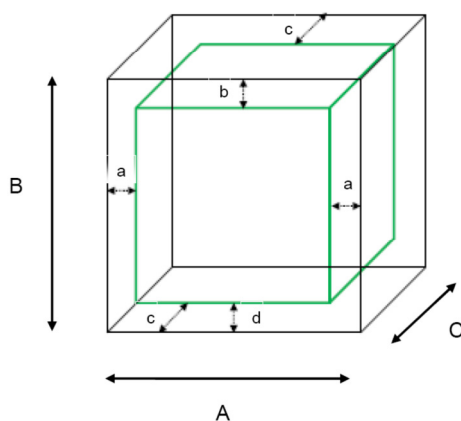
## 4.2. Shelves and usable space

Each P50 incubator is supplied with 3 perforated stainless steel shelves. The shelves locate into removable stainless steel racking. The shelves incorporate an anti-tilt mechanism, stopping the shelves from being pulled out too far.

Each shelf measures 383mm wide by 250mm deep. The minimum spacing between shelves is 105mm. There are 3 possible positions for the shelves.



The usable space within the incubator is the volume in which the conditions are within our published data.



A, B, C = Internal dimensions

a = distance from left and right wall = 70mm

b = distance from top = 70mm

c = distance from front and back wall = 70mm

d = distance from base = 70mm

For practical purposes this is the perforated area on each shelf.

- Do not place any samples outside of this space.
- Do not over fill each shelf.
- Allow sufficient room between samples to allow for airflow.
- Do not use the top shelf for very deep samples.

## 4.3. Water tray

A stainless steel water tray is supplied which allows the incubator to provide 90%rH.

Place the tray on the floor of the incubator, locating it within the side racking.

Carefully fill the tray with 450ml of distilled, sterilised water.

LEEC recommend that you clean and refill the tray every week.




Any spillages within the chamber should be removed and cleaned immediately. Water left on the chamber floor will cause condensation to form.


Under no circumstances should any equipment be placed in the water tray or on the chamber floor.

Remove the water tray before moving the incubator.

Empty the water tray if the incubator is switched off, otherwise condensation will occur.

#### 4.4. Gas connection

	<p><b>Risk of injury. Compressed gas. Risk of damage to unit.</b></p>
	<p><b>Observe relevant regulations for handling CO<sub>2</sub> Risk of asphyxiation. Site must have adequate ventilation.</b></p>
	<p><b>Risk of CO<sub>2</sub> poisoning. Site must have adequate ventilation.</b></p>

 The incubator is designed for use with CO<sub>2</sub> of 99.5% purity. Input pressure greater than 1.0 bar (15 psi) will damage the incubator so a Pressure Reducing Valve (PRV) must be used.

The CO<sub>2</sub> inlet to the incubator is via a 4mm barbed push fitting.

PRV's with the correct fittings and other gas accessories can be supplied by LEEC. ⇒ **Section 7**




For correct connection of CO<sub>2</sub>, follow these steps in order:

- 1) Connect the supplied tubing and HEPA filter to the gas supply.
- 2) Fully close the PRV.
- 3) Open the main valve on the gas bottle or central supply.
- 4) Adjust the PRV pressure of the gas supply to between 0.3 bar and 0.7 bar (4.5 to 10 psi).
- 5) Close the main valve on the gas bottle / central supply.
- 6) Connect the other end of the tubing to the incubator CO<sub>2</sub> inlet. Secure with the supplied clip.

Repeat these steps whenever you change the CO<sub>2</sub> bottle or supply.

Turn off the main valve and disconnect from the CO<sub>2</sub> supply if the incubator is to be unused for extended periods.

#### 4.5. Electrical connection

	<p><b>Risk of injury.</b>  <b>Risk of damage to unit. Observe correct mains supply voltage.</b></p>
	<p><b>Risk of electrical shock. Do not connect with wet hands.</b>  <b>No user serviceable parts. Do not remove service panels.</b></p>
	<p><b>Disconnect unit in an emergency.</b></p>

Before connecting the incubator, check that the electrical supply corresponds with the values on the incubator data plate. If in doubt consult a qualified electrician.


The incubator is designed to operate from a single phase electrical supply of: 230V AC  $\pm 10\%$  50/60Hz.

This incubator **MUST** be connected to a protective earthed supply.

Further details can be found in the technical data.  $\Rightarrow$  **Section 11.1**

Plug the supplied power lead into the IEC connector on the rear of the incubator.

Plug the other end of the IEC lead into the electrical supply.


 **In an emergency you may need to isolate the incubator from the electrical supply by disconnecting the mains supply plug. Make sure that the mains supply plug is easily accessible.**

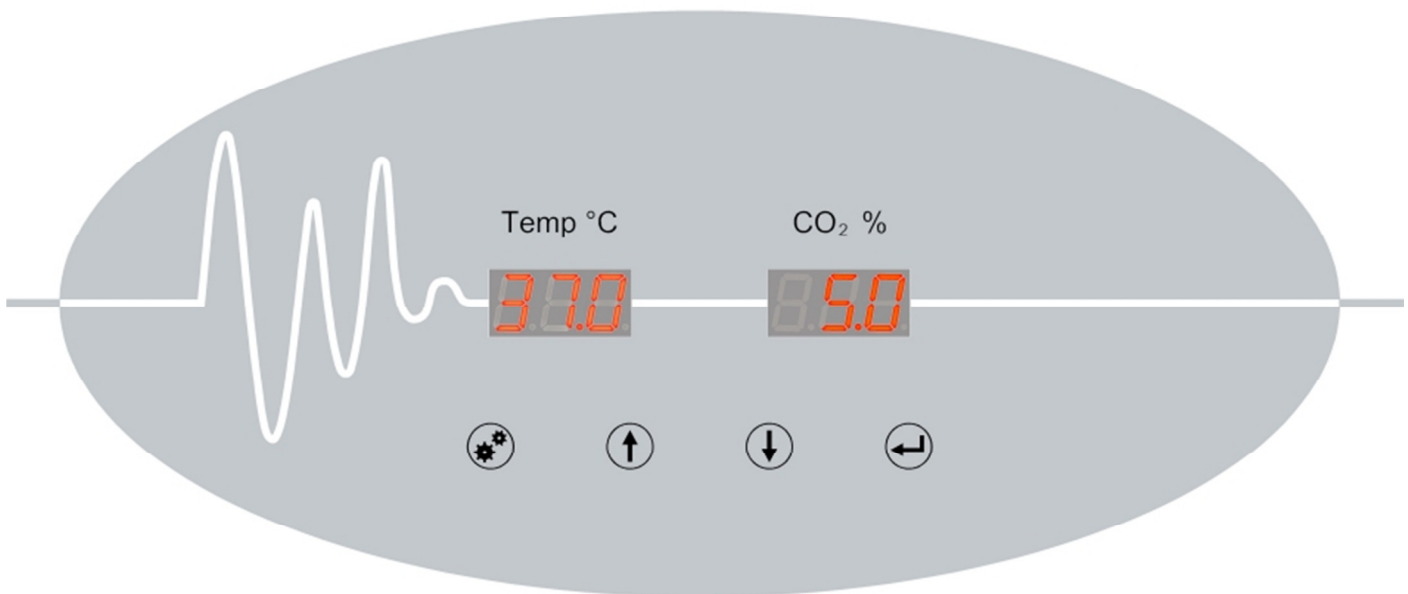
## 5. Getting started

### 5.1. Start up

Turn the incubator on using the power switch on the rear panel. The incubator will power up and the digital displays will show the current temperature and CO<sub>2</sub> level inside the chamber.



If an alarm sounds on start up, press  to silence it. The display will also flash when an alarm activates to show which system is in an alarm state (Temperature, CO<sub>2</sub> or both).



### 5.2. Factory presets

The following values are preset to allow you to work straight away:

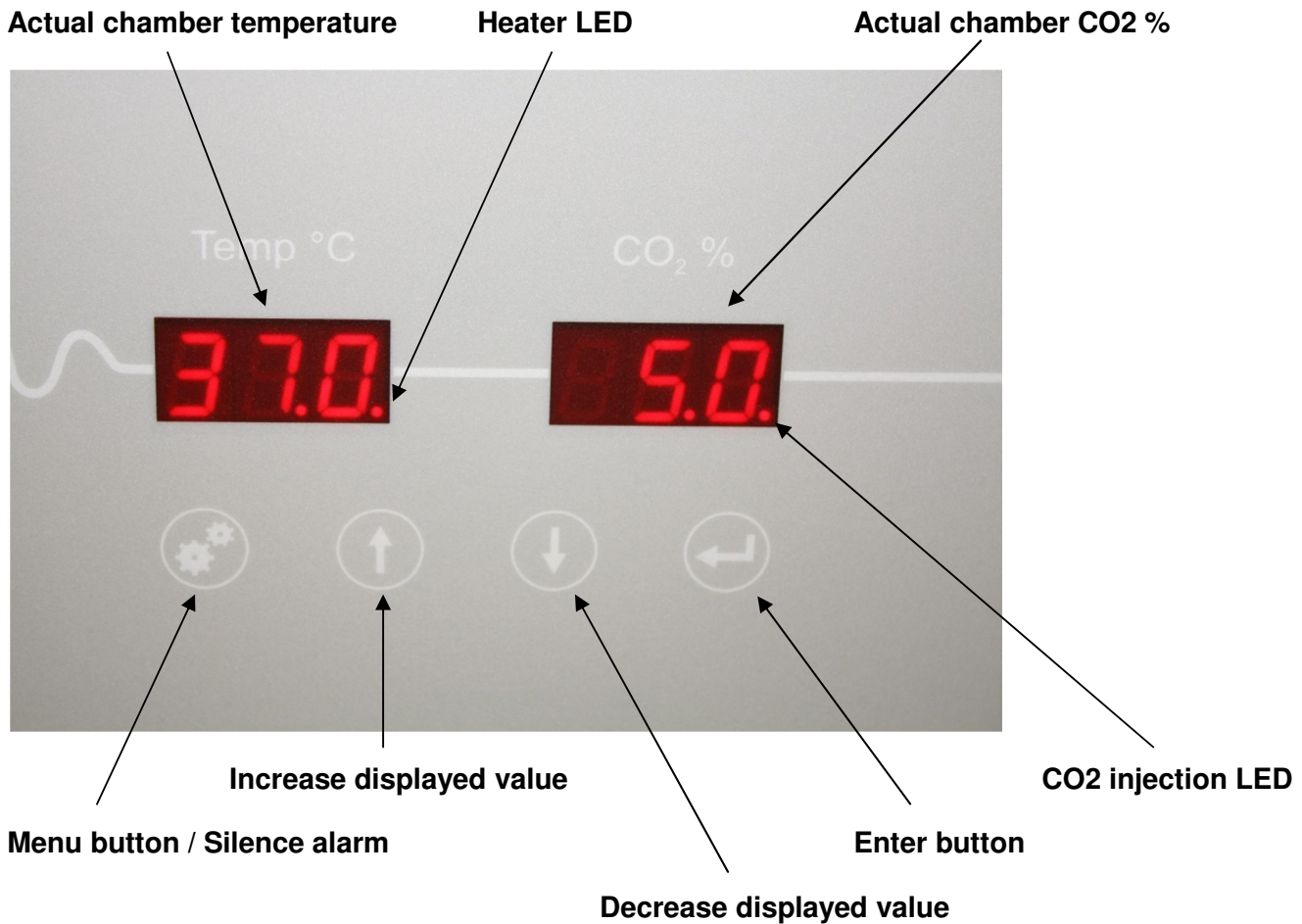
Parameter	Parameter	Value
<b>SPT</b>	Set Point temperature	37.0°C
<b>SPc</b>	Set Point CO <sub>2</sub>	5.0%
<b>HI t</b>	High temperature alarm	+1.0°C relative to set point
<b>LOt</b>	Low temperature alarm	-1.0°C relative to set point
<b>HI c</b>	High CO <sub>2</sub> alarm	+1.0% relative to set point
<b>LOc</b>	Low CO <sub>2</sub> alarm	-1.0% relative to set point
<b>dod</b>	Door open alarm delay timer	30 seconds

### 5.3 Main display

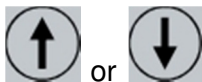
The main displays show the current temperature and CO2 conditions inside the chamber. If one of the displays is flashing, an alarm condition exists. ⇒ **Section 5.7 and Section 5.10 for alarms**





If an alarm sounds on start up, press  to silence it.




The buttons require a 1 second press before any change happens. This is to guard against accidental changes.

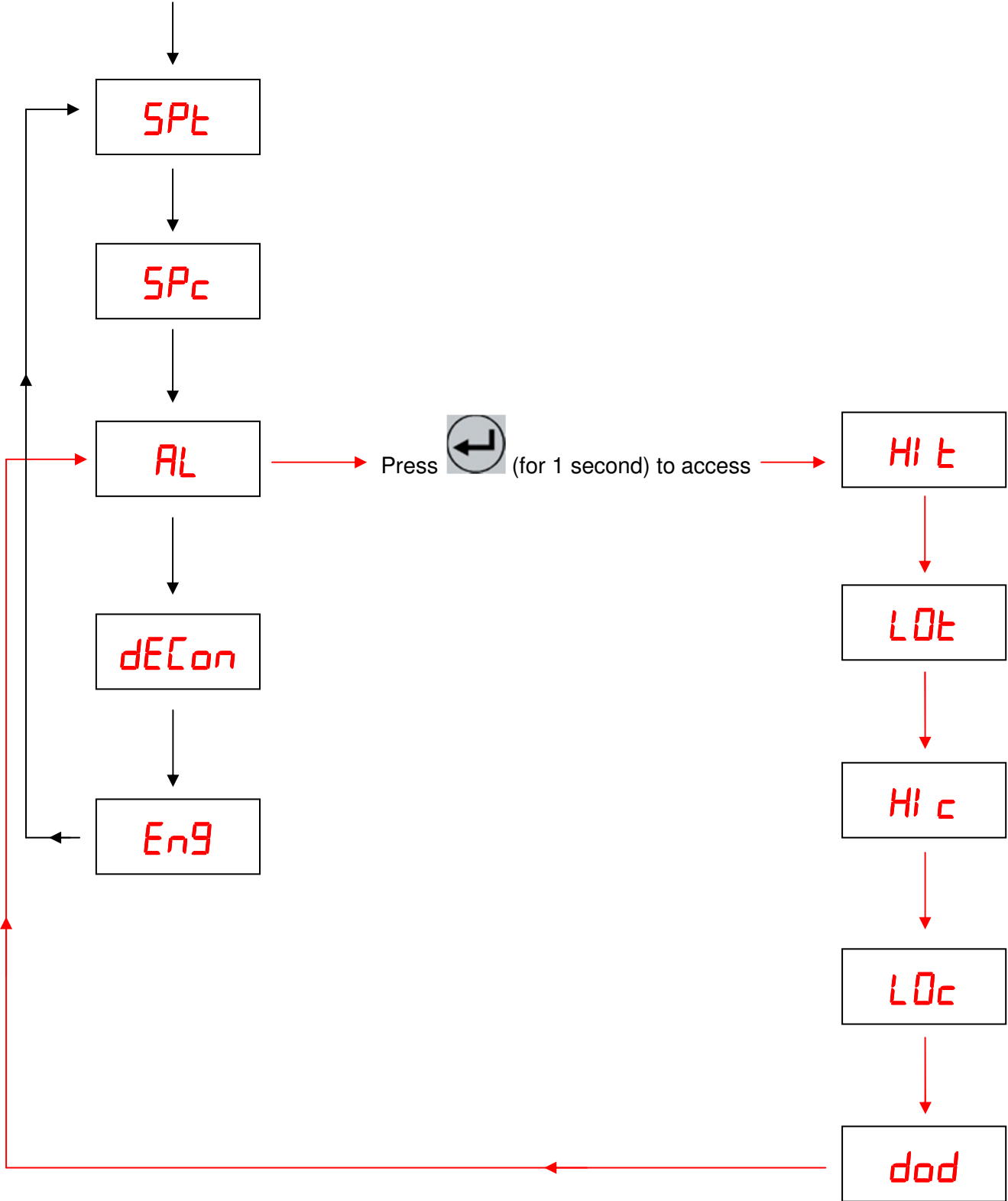


When using the  or  buttons, a long press will result in a faster change of value on the display.

The controls menu map is shown on the next page.

### 5.4 Controls menu map


Press  (for 1 second) then each subsequent press moves on one step.










### 5.5 Changing temperature set point

To change the chamber temperature:

Press  (for 1 second). **SPT** will show in the left display and a value **37.0** in the right display.

Press the  button or the  button to change the value in the right display.

Press  (for 1 second) to confirm.

Hold  and  together at the same time to go back to the main display.





Minimum set point is limited to 0.0°C.



Maximum set point is limited to 60.0°C.


### 5.6 Changing CO2 set point



To change the chamber CO2 level:

Press  (for 1 second). **SPT** will show in the left display and a value **37.0** in the right display.

Press  (for 1 second). **SPC** will show in the left display and a value **5.0** in the right display.

Press the  button or the  button to change the value in the right display.

Press  (for 1 second) to confirm.

Hold  and  together at the same time to go back to the main display.



Minimum set point is limited to 0.0%

Maximum set point is limited to 20.0%.

## 5.7 High and low temperature alarms

The incubator has high and low temperature alarm system as standard. When the chamber temperature triggers the alarm, the Temperature display will flash and a buzzer will sound.

The high and low alarm limits are relative to the chamber set point which means that they do not need adjusting when you change the chamber temperature. The over and under temperature alarms will “follow” the changes in your chamber temperature.

### For example:

If the chamber temperature set point is 37.0°C and the high alarm limit is +1.0°C, the alarm will trigger at 38.0°C (1.0°C higher than the chamber temperature).

If the chamber temperature set point is changed to 39.0°C, the high alarm limit will still be +1.0°C, so the alarm will trigger at 40.0°C (1.0°C higher than the chamber temperature).



If an alarm sounds, press




to silence it.


To change the high temperature alarm ⇒ **Section 5.8**


To change the low temperature alarm ⇒ **Section 5.9**



## 5.8 Changing high temperature alarm


Press  (for 1 second). **SPE** will show in the left display and a value **37.0** in the right display.



Press  (for 1 second). **SPC** will show in the left display.

Press  (for 1 second). **AL** will show in the left display.


Press  (for 1 second). **HI L** will show in the left display.

Press  or  to change the value in the right display. (Default value is **1.0** )


Press  (for 1 second) to confirm new value.

Hold  and  together at the same time to go back to the main display.

## 5.9 Changing low temperature alarm



Press  (for 1 second). **SPE** will show in the left display and a value **37.0** in the right display.


Press  (for 1 second). **SPC** will show in the left display.



Press  (for 1 second). **AL** will show in the left display.

Press  (for 1 second). **HI L** will show in the left display.

Press  (for 1 second). **LOL** will show in the left display.

Press  or  to change the value in the right display. (Default value is **1.0** )

Press  (for 1 second) to confirm new value.

Hold  and  together at the same time to go back to the main display.

## 5.10 High and low CO2 alarms

The incubator has high and low CO2 alarm system as standard. When the chamber CO2 level triggers the alarm, the CO2 display will flash and a buzzer will sound.

The high and low alarm limits are relative to the chamber set point which means that they do not need adjusting when you change the chamber temperature. The over and under CO2 alarms will “follow” the changes in your chamber CO2 level.

### For example:

If the chamber CO2 set point is 5.0% and the high alarm limit is +1.0%, the alarm will trigger at 6.0% (1.0% higher than the chamber CO2 set point).

If the chamber CO2 set point is changed to 10.0%, the high alarm limit will still be +1.0%, so the alarm will trigger at 11.0% (1.0% higher than the chamber CO2 set point).



If an alarm sounds, press




to silence it.


To change the high CO2 alarm ⇒ **Section 5.11**

To change the low CO2 alarm ⇒ **Section 5.12**

## 5.11 Changing high CO2 alarm

Press  (for 1 second). **SPE** will show in the left display and a value **37.0** in the right display.



Press  (for 1 second). **SPC** will show in the left display.


Press  (for 1 second). **AL** will show in the left display.



Press  (for 1 second). **HI E** will show in the left display.

Press  (for 1 second). **LOE** will show in the left display.


Press  (for 1 second). **HI C** will show in the left display.

Press  or  to change the value in the right display. (Default value is **1.0** )


Press  (for 1 second) to confirm new value.

Hold  and  together at the same time to go back to the main display.

## 5.12 Changing low CO2 alarm

Press  (for 1 second). **SPt** will show in the left display and a value **37.0** in the right display.

Press  (for 1 second). **SPc** will show in the left display.



Press  (for 1 second). **AL** will show in the left display.


Press  (for 1 second). **HI t** will show in the left display.



Press  (for 1 second). **LOt** will show in the left display.

Press  (for 1 second). **HI c** will show in the left display.

Press  (for 1 second). **LOc** will show in the left display.

Press  or  to change the value in the right display. (Default value is **1.0** )


Press  (for 1 second) to confirm new value.

Hold  and  together at the same time to go back to the main display.


### 5.13 Door Open Alarm


The incubator is fitted with a “door open” alarm system to alert you when the outer door has not been closed properly or when it has been left open for a period of 30 seconds or more. The 30 second delay timer should be suitable for most users, but if more time is needed to load and unload the chamber, the door open timer can be adjusted.

#### 5.14 Changing the door open alarm delay timer


Press  (for 1 second). **SPE** will show in the left display and a value **37.0** in the right display.

Press  (for 1 second). **SPC** will show in the left display.


Press  (for 1 second). **AL** will show in the left display.



Press  (for 1 second). **HI E** will show in the left display.


Press  (for 1 second). **LOE** will show in the left display.



Press  (for 1 second). **HI C** will show in the left display.

Press  (for 1 second). **LOC** will show in the left display.

Press  (for 1 second). **dod** will show in the left display and a value **3.0** in the right display

Press  or  to change the value in the right display. Default value is **3.0** which is 30 seconds (ignore the decimal point).

Press  (for 1 second) to confirm new value.

Hold  and  together at the same time to go back to the main display.



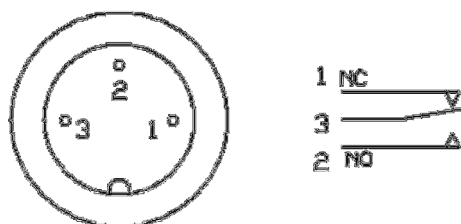
## 6. Options

### 6.1. Volt free alarm relay (BMS)

LEEC Culture Safe Precision CO<sub>2</sub> incubators are fitted as standard with a volt free changeover relay for connection to a building maintenance system (BMS).

This relay changes state whenever the incubator is in an alarm condition. The relay changes back to its original state once the alarm condition clears.

The connections are as shown below:



SOLDER VIEW OF CABLE SOCKET

### 6.2. Multi-door (6ID and 3ID)

**This can be retro fitted.**

The inner glass door can be replaced with a multi-door. Options are available for 6 smaller glass doors or 3 smaller glass doors in a stainless steel frame.

By only opening one small door to access the sample you require, less heat, humidity and CO<sub>2</sub> are lost. This improves recovery of the chamber back to ideal conditions and reduces the amount of CO<sub>2</sub> used.

## 7. Accessories

This is the list of some of the accessories currently available.

Please contact LEEC if the part you require is not listed.

<b>PRV</b>	Single stage CO <sub>2</sub> pressure reducing valve
<b>PRV2</b>	Two stage CO <sub>2</sub> pressure reducing valve
<b>RO6</b>	In line CO <sub>2</sub> reducing valve with gauge
<b>PNEU</b>	Automatic change over unit for two cylinders
<b>TYGON</b>	Tygon gas tubing

## 8. Cleaning



**Electrical hazard. Do not spill water or cleaning fluids over the inner or outer surfaces.**

**Disconnect before cleaning.**

**Completely dry the unit before reconnecting the power.**

### 8.1. Outer surfaces

Always disconnect the incubator before cleaning.

It is recommended that the exterior of the incubator regularly wiped clean. Use a non-abrasive soft cloth dampened with a warm soapy water solution.

Make sure the exterior is thoroughly dry after cleaning.

### 8.2. Inner surfaces

It is advisable to clean the chamber regularly.

Use a 70% isopropanol 30% distilled water solution. Apply using a sterile cloth so as not to introduce any contamination.

Never use any of the following:

- Any chlorine based detergents or bleaches.
- Any acidic cleaning agents.
- Sodium Azide
- Iodine
- Ferric Chloride

Wipe over the inner surfaces of the stainless chamber, all the shelves including the underside of the shelves, the shelf racks and the water tray.

The shelves, racking and water tray can be sterilised in an autoclave if required.

Clean the glass door and the inner gasket seal.

Clean the inner stainless steel surfaces of the outer door and the outer door gasket.

## 9. Service

### 9.1. Warranty

LEEC Culture Safe Precision incubators are supplied with a two year manufacturer's warranty from the date of installation.

To register your warranty, please fill in the User Guarantee Registration Card and post to LEEC Limited or to your local distributor.

### 9.2. Preventative maintenance

This Culture Safe CO<sub>2</sub> Incubator is built to last for many years, but to ensure that the unit continues to perform to the highest level we recommend that you purchase a preventative maintenance contract from LEEC.

The incubator should be calibrated annually.

### 9.3. Returning a unit.

Should your incubator require repair or maintenance then contact your local distributor in the first instance.

Returns to LEEC will only be accepted with prior authorisation from the Service Department.

We recommend that you keep all packaging.

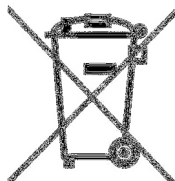
When returning a unit please include the following information:

- Incubator model and serial number
- Date of purchase
- Authorisation number
- Name of local distributor if not purchased from LEEC
- A detailed description of the fault (we can never have too much information)
- Where was the incubator located
- Contact details of the person who reported the fault
- A completed decontamination certificate (plus a copy faxed through in advance)



LEEC cannot accept any returns without a completed decontamination certificate.

## 10. DISPOSAL



The incubator must not be disposed of at public waste collection points. It must only be disposed of by licensed waste recycling companies.

Contact LEEC for further information regarding WEEE regulations.

## 11. Technical information

### 11.1. Technical data

<b>TEMPERATURE MANAGEMENT</b>		
Range	°C	5°C above ambient to 60°C
Control	°C	0.1°C
Stability	°C	±0.1°C @ 37.0°C
Uniformity	°C	±0.25°C @ 37.0°C
Door recovery, 30s opening	minutes	13
<b>CO2 MANAGEMENT</b>		
Range	%CO2	0-20%
Control	%CO2	±0.1%
Stability	%CO2	±0.2%
Uniformity	%CO2	±0.2%
Door recovery, 30s opening	minutes	6
CO2 sensor type	NDIR	
CO2 inlet pressure	Bar	0.3 to 0.7
CO2 inlet connection type	4mm push fit barbed type	
<b>HUMIDITY MANAGEMENT</b>		
Humidity control type	Passive	
Range	%rH	90% ±5%
Door recovery, 30s opening	minutes	50
<b>ELECTRICAL DATA</b>		
Nominal voltage 50/60Hz	V	230 1N ~PE
Power; P50	W	350
Power consumption	kWh	0.058
Main fuse F1; P50	5.0A / 6.3 x 32mm / 250V / TT	
<b>EXTERIOR DIMENSIONS</b>		
Width	mm (inches)	534 (21.0)
Height	mm (inches)	736 (29.0)
Depth	mm (inches)	460 (18.1)
Wall clearance, rear	mm (inches)	100 (3.94)
Wall clearance, side	mm (inches)	50 (1.97)
<b>INTERIOR DIMENSIONS</b>		
Width	mm (inches)	402 (15.8)
Height	mm (inches)	402 (15.8)
Depth	mm (inches)	300 (11.8)
Volume	Litres (cu. ft.)	50 (1.77)
Number of shelves	3 shelves	
<b>SHIPPING DIMENSIONS</b>		
Width	mm (inches)	800 (31.5)
Height	mm (inches)	960 (37.8)
Depth	mm (inches)	600 (23.6)
<b>WEIGHT</b>		
P50, Net	kg (lbs)	38 (84)
P50, Shipping	kg (lbs)	50 (88)

### 11.2. Dimensional drawings

